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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,254	09/26/2003	Jens-Christian D. Meiners	UOM 0275 PUSP	8836
22045	7590	04/18/2006	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			ORTIZ, ANGELA Y	
			ART UNIT	PAPER NUMBER
			1732	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/672,254

Applicant(s)

MEINERS ET AL.

Examiner

Angela Ortiz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by admitted prior art as set forth on pages 1-3 of the instant specification for the reasons cited in the previous office action.

The admitted prior art substantially teaches the basic claimed process and device that results from the process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion, a substrate and the interconnect connected to the elastomeric portion wherein the elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 21-33, 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art as set forth on pages 1-3 of the instant specification, in view of Bauer, USP 4,304,749 (of record) for the reasons set forth in the previous office action.

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The admitted prior art substantially teaches the basic claimed process of molding a microfluidic device having at least one interconnect comprising an elastomeric portion, a substrate and the interconnect connected to the elastomeric portion wherein the elastomeric portion and the substrate together define a fluid passage. See pages 1-3 of the instant specification.

However the admitted prior art requires baking and does not set forth a curable contracting resin as claimed.

The added secondary reference teaches as conventional the feature of forming a fluidic structure using a polymeric material that does not require baking, having contracting properties as claimed. A cover 23 and substrate 22 are provided adjacent one another such that there is provided a fluid passage therebetween. A thermoset plastic resin is injected into the mold cavity to encapsulate the assembly, such that it contracts upon solidification. See col. 3, lines 1-25; col. 5, lines 1-15, 15-25.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to so provide a contractable resin as shown in the added reference, when performing the process set forth in the admitted prior art, for avoiding baking of the resin, and for achieving an encapsulated device securely assembled.

*With respect to the newly claimed feature of elastomeric portions surrounded by resin on all sides where interconnects are present, this feature is not set forth as a positive manipulative step, but rather as desired results; note that encapsulation by definition surrounds the part being molded, and because the reference shows encapsulation, it thus reads on the limitation of "surrounding all sides" as claimed.*

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Note that new claim 21 does not require the "further elastomeric portion"; and thus the previous rejection remains applied.

With respect to claims 22-25, 39-40, note that the admitted prior art shows a glass substrate, and fluid tubing; note that the tubing claimed in claims 23-25 are deemed functional equivalents of one another; should applicant argue that such are not, a species election will be required.

With respect to claims 26-27, 28-29, and 38, these claims are deemed obvious alternatives; should applicant argue that such are not, a species election will be required; note that the resins claimed are equivalent to those materials disclosed in the applied prior art.

With respect to claim 32, note that both references teach the limitation claimed; see for example, the added reference, figure 3.

With respect to claim 33, note that the added reference shows a two-part frame in figure 3.

With respect to claims 30-33, note that the Bauer reference teaches a liquid resin at col. 5, lines 15-25 and sets forth an alternative embodiment to injection molding in a mold, wherein use of a mold is avoided by flowing injected material into holes in the assembly and forming rivets, so that the same effect is achieved. See col. 3, lines 27-42 and col. 4, lines 25-65. See also col. 2, lines 50-60 wherein the encapsulating resin may be the same material as the body (which is thermoset). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a liquid resin and pouring as claimed, in view of the Bauer reference, for using the same

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material and achieving an integral molding avoiding unneeded adhesives, and avoiding the use of a mold, which may be cumbersome, and form rivets to achieve the same result. Note that the disclosed thermoplastic resins are curable and are equivalent alternatives to the liquid curable resin material as claimed.

### ***Response to Arguments***

Applicant's arguments filed January 9, 2006 have been fully considered but they are not persuasive.

Applicant argues the 102(b) rejection of the product-by-process claims, stating that the encapsulation step as set forth in the independent claim, claim 21, is not taught by the prior art and thus the rejection fails to show all the features as claimed.

The method steps in a product by process claim do not further limit the product. Note that MPEP 2113 states that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The argument provided with respect to the product by process claims, is that an encapsulant is lacking in the prior art. Please note that encapsulant is not claimed in the product claims. MPEP 2113 further states that "The Patent Office bears a lesser

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burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference **between the claimed product and the prior art product**. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). No such difference has been claimed or shown between the products.

Applicant argues that the section of the applied prior art reference to Bauer cited in the rejection did not show the features as argued.

Applicant is also direct to col. 2, lines 60-68 and col. 3, lines 1-25, wherein the cover and substrate are specifically described.

60 rial which retains its shape.  
A similar arrangement is illustrated in FIGS. 2 and 3 wherein the final product, instead of having an outlet tube, is provided with an outlet opening so that fluid may be sprayed into the surrounding environment from the device. Specifically, a body member 22 has a fluidic oscillator 20 defined in its upper surface 21. Oscillator 20 may be of the same type described for oscillator 10. A cover plate 23 is disposed over surface 21 and the two

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pieces are placed between mold halves 26 and 27. Body member 22 includes a depending stem portion 24 through which a fluid supply bore 25 is longitudinally defined. The oscillator 20 is defined in surface 21 at a location where the oscillator outlet region 29 opens to the edge of the body member 22 whereby fluid from the oscillator can be sprayed into the surrounding ambient environment (after the device has been removed from the mold halves).

The body member 22 and cover plate 23 are provided with a cut away portion in the form of a band 28 extending entirely about the body member and cover plate. This band 28 defines a gap between the mold halves 26, 27, surrounding the device but within the extreme outer confines of the body member and cover plate. This gap communicates with an injection molding inlet 30 defined in the mold halves (for example, mold half 27). Upon injection of molten plastic through nozzle 30, the plastic fills gap 28 and solidifies upon cooling. The solidified plastic shrinks about the body member 22 and cover plate 23, binding these two elements together in sufficiently tight engagement to seal the fluidic oscillator defined in surface 21.

Note that the cover 23 and substrate 22 are placed within the mold cavity of a molding apparatus, and resin is injected to surround both pieces, thereby encapsulating the pieces as is well known in the molding art, and contracting to hold the pieces in tight engagement. As the cover and substrate are placed together, a fluid passage 25 is formed therebetween. The pertinent citations have been copied into the action for ease of reference. Note that new claim 38 is directed to the same subject matter of old claim 28, and is similarly rejected.

### **Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Ortiz whose telephone number is 571-272-1206. The examiner can normally be reached on Monday-Thursday 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaiani can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Angela Ortiz  
Primary Examiner  
Art Unit 1732

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